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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/625,336	07/25/2000	Moris Kori	004742/AMI-00-07	7523

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EXAMINER

MOORE, KARLA A

ART UNIT	PAPER NUMBER
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1763

12

DATE MAILED: 07/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

MF=12

Office Action Summary

Application No.

09/625,336

Applicant(s)

KORI ET AL.

Examiner

Karla Moore

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) ~~4-18~~ ¹⁻²⁰ is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed 10/23/00, 7/25/01, 4/4/02, 4/11/02 and 6/5/025 fail to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered. In each of the information disclosure statements, items marked (lined-through) were not in the application at the time of examination or did not contain a translation.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 3 and 16-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 3 recites the limitation "said refractory metal". There is insufficient antecedent basis for this limitation in the claim.

5. Claims 16-20 recite the limitation "said first and second reactive gases" in line 22-23. There is insufficient antecedent basis for this limitation in the claims.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 1763

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

7. Claims 1-15 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Publication No. 2001/400441250 to Werkhoven et al.

8. Werkhoven et al. disclose a method for forming a layer on a substrate disposed in a processing chamber, said method comprising: chemisorbing onto said substrate alternating monolayers of a first compound and second compound (paragraph 18), with said second compound having fluorine atoms associated therewith, with each of said first and second compounds being introduced into said processing chamber along with a carrier gas; and controlling a quantity of said fluorine atoms associated with the monolayer of said second compound as a function of said carrier gas (paragraph 48, 116). The carrier gas is selected from a group of gases consisting of nitrogen, argon and hydrogen (paragraph 61). The first compound (triethyl boron or diborane) includes a boron containing compound (used for doping to increase conductivity-paragraph 7) and the second compound is a refractory metal (WF_6) selected from the group consisting of titanium and tungsten (paragraphs 46-47).

9. The method further comprises purging said processing chamber following chemisorption of each of the alternating layers. The purging process includes both introducing a purging gas therein and subsequently pumping said process chamber to evacuate all gases disposed. The purge gas and carrier gas may have identical or differing constituents as each are selected from the same group of compounds -- hydrogen, nitrogen and argon (paragraph 65).

10. With respect to claim 15, Werkhoven further discloses a processing system for processing a substrate in Figure 1, said system comprising: means for chemisorbing, onto said substrate, alternating

Art Unit: 1763

monolayers of a first and a second compound having fluorine atoms associated therewith, with each of said first and second compounds being introduced into said processing chamber along with a carrier gas () and means for controlling a quantity of fluorine atoms associated with said second compound as a function of said carrier gas.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Werkhoven et al. in view of Japanese Patent No. 03056678 to Tazaki.

13. Werkhoven et al. disclose a processing system as described above which further comprises: a body (Figure 1, 12) defining a processing chamber; a holder (18) disposed within said processing chamber to support said substrate; a gas delivery system (46, paragraphs 45, 48) in fluid communication with said processing chamber; a first temperature control system (paragraph 41) in thermal communication with said processing chamber; and a pressure control system (paragraph 59) in fluid communication with said processing chamber.

14. However, Werkhoven fails to teach the use of a controller in electrical communication with said gas delivery system, said temperature control system and said pressure control system or memory in data communication with said controller, said memory comprising a computer-readable medium having a computer-readable program embodied therein, including a first set of instructions for controlling the gas delivery system to chemisorb alternating monolayers of a first and second compound onto a substrate, a second set of instructions to control said gas delivery system to control a quantity of fluorine atoms associated with the monolayer of said second compound by introducing, into said processing chamber, a carrier gas along with said first and second compounds/reactive gases and two further sets of instructions

Art Unit: 1763

to control said gas system to purge said processing chamber by introducing purge gas therein following chemisorption of each of the alternating monolayers and to control said pressure control system to purge said processing chamber by evacuating said processing chamber following chemisorption of each of the alternating monolayers.

15. Tazaki teaches the use of a controller in electrical communication deposition processes and memory in data communication with the controller, said memory comprising a computer-readable medium having a computer readable program embodied therein, said computer-readable program including instructions for carrying out processes for forming a layer on a substrate for the purpose of forming and executing a program for forming a deposition layer effectively.

16. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a memory in communication with a controller with a computer readable program therein in Werkhoven in order to execute a program for forming a deposition effectively as taught by Tazaki.

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 703.305.3142. The examiner can normally be reached on Monday-Friday, 8:30am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 703.308.1633. The fax phone numbers for the organization where this application or proceeding is assigned are 703.872.9310 for regular communications and 703.872.9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703.308.0661.

Application/Control Number: 09/625,336

Page 6

Art Unit: 1763

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July 11, 2002


GREGORY MILLS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700